**Science News**

# Sun-Triggered Protein Drives Skin Cancer, Researchers Find

ScienceDaily (Feb. 6, 2011) — An unexpected immune protein exacerbates cancer due to sun exposure, report researchers in the January 27th issue of Nature. The study suggests that drugs blocking the protein might halt tumor growth in skin cancer patients.

Cutaneous melanoma, an aggressive form of skin cancer, appears to be on the rise. And mortality rates from this difficult-to-treat disease are some of the highest in cancer. Severe sunburns at an early age raise a person's risk of cutaneous melanoma, but the way in which those burns lead to cancer has remained elusive.

In order to discover new ways of treating melanoma, Edward De Fabo, a research professor of in the department of Microbiology, Immunology, and Tropical Medicine at George Washington University Medical Center in Washington, D.C. and a co-corresponding author on the current paper, has been examining the pathway between ultraviolet (UV) rays and melanoma for over a decade. "We ultimately want to figure out what goes wrong so that we can fix it," De Fabo says.

In 2004, he and his collaborators confirmed suspicions that UV-B radiation, as opposed to UV-A, triggered melanoma. And in the current Nature study, they find that UV-B causes white blood cells called macrophages to migrate higher in the skin of mice and release an immune protein, interferon-ÿ. Instead of protecting the body like most interferon proteins do, interferon-ÿ allowed tumors to grow by preventing the body's natural immune response.

"We didn't expect to see interferon-ÿ aiding the tumor, instead of killing cancerous cells," De Fabo says. Interferons, named for the way they interfere with viruses, are traditionally thought to fight tumors. In fact, skin cancer is occasionally treated with another type of interferon, interferon-ÿ, but with limited success.

In exposing an unforeseen dark-side of these immune proteins, the report points to a new direction in drug development. Blocking interferon-ÿ prevented melanoma cancerous skin cells from growing into tumors in mice. A drug that intercepts interferon-ÿ, or its effects, might therefore be used to treat melanoma patients. Indeed, the team found that 70% of cancerous cells from melanoma patients contained high levels of the interferon-ÿ protein.

De Fabo and his colleagues made their discovery thanks to a new set of tools, which will aid melanoma researchers for years to come.

At George Washington University, De Fabo developed a high-tech UV radiation device able to shine a precise UV-A or UV-B beam onto several mice simultaneously. Meanwhile, Glenn Marino at the National Cancer Institute in Bethesda, Maryland collaborated with GW researcher Frances Noonan, to engineer mice that could develop the type of melanoma people have, in which cancerous skin cells, or melanoctes, occur near the epidermis. Together, with Raza Zaidi from Merlino's lab, the team made melanocytes glow by labeling them with a green fluorescent protein, so that the hidden cells could be readily extracted from the mice for further experimentation. De Fabo and Noonan's work was supported in part by the National Cancer Institute at the U.S. National Institutes for Health and the Melanoma Research Foundation.

"One real highlight of this study is our unique methodology, both in UV radiation technology and the creation of a mouse melanoma model that resulted from a really neat collaboration," De Fabo says. "These wonderful tools will help melanocyte biology --and hence melanoma studies -- hugely."

**Story Source:**

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